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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,267	07/10/2007	Koji Tominaga	KKP0002US	9701
23413 7590 11/10/2011 CANTOR COLBURN LLP 20 Church Street 22nd Floor Hartford, CT 06103				
EXAMINER ZERVIGON, RUDY				
ART UNIT		PAPER NUMBER		
1716				
NOTIFICATION DATE		DELIVERY MODE		
11/10/2011		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

Office Action Summary

Application No.

10/585,267

Applicant(s)

TOMINAGA ET AL.

Examiner

RUDY ZERVIGON

Art Unit

1716

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1 and 3-8 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1 and 3-8 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI-100)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 8, 2011 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 3-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Bang, Won et al. (US 20020000195 A1). Bang teaches a film forming system (Figure 2; [0027]) comprising: a chamber (102; Figure 2; [0033]), a precursory gas (222; Figure 2) supplying line (252; Figure 2; [0029]-Applicant's 2; Figure 1) to supply the chamber (102; Figure 2; [0033]) with precursory gas (222; Figure 2), a reactive gas (224; Figure 2) supplying line (254; Figure 2; [0029]-Applicant's 1; Figure 1) to supply the chamber (102; Figure 2; [0033]) with reactive gas (224; Figure 2), a precursory gas (222; Figure 2) vaporizer (202; Figure 2; [0029]) for outputting precursory gas (222; Figure 2) to the precursory gas (222; Figure 2) supplying line (252; Figure 2; [0029]-Applicant's 2; Figure 1); a reactive gas (224; Figure 2) vaporizer (204; Figure 2; [0029]) for outputting reactive gas (224; Figure 2) to the reactive gas (224; Figure 2) supplying

line (254; Figure 2; [0029]-Applicant's 1; Figure 1), and a purge gas supplying line (piping header feeding 281,284; Figure 2; [0029]-Applicant's 3; Figure 1) to supply purge gas (208; Figure 2) that purges the precursory gas (222; Figure 2) and the reactive gas (224; Figure 2), and that forms a thin film on a substrate in the chamber (102; Figure 2; [0033]) by supplying the precursory gas (222; Figure 2) or the reactive gas (224; Figure 2) and purging alternately, and wherein the precursory gas (222; Figure 2) supplying line (252; Figure 2; [0029]-Applicant's 2; Figure 1) comprises a precursory gas (222; Figure 2) middle line (252; Figure 2) having a predetermined volume and into which the precursory gas (222; Figure 2) can be filled at a time when the precursory gas (222; Figure 2) is not supplied, and/or wherein the reactive gas (224; Figure 2) supplying line (254; Figure 2; [0029]-Applicant's 1; Figure 1) comprises a reactive gas (224; Figure 2) middle line (254; Figure 2; [0029]) having a certain volume and into which the reactive gas (224; Figure 2) can be filled at a time when the reactive gas (224; Figure 2) is not supplied, wherein a first switching valve (272; Figure 2; [0029]) is provided on the precursory gas (222; Figure 2) supplying line (252; Figure 2; [0029]-Applicant's 2; Figure 1) and/or reactive gas (224; Figure 2) supplying line (254; Figure 2; [0029]-Applicant's 1; Figure 1) at a position downstream (see Examiner's annotated Figure 2) of the precursory gas (222; Figure 2) vaporizer (202; Figure 2; [0029]) and/or the reactive gas (224; Figure 2) vaporizer (204; Figure 2; [0029]) at an inlet port of the precursory gas (222; Figure 2) middle line (252; Figure 2) and/or the reactive gas (224; Figure 2) middle line (254; Figure 2; [0029]); wherein a second switching valve (274; Figure 2; [0029]) is provided on the precursory gas (222; Figure 2) supplying line (252; Figure 2; [0029]-Applicant's 2; Figure 1) and/or reactive gas (224; Figure 2) supplying line (254; Figure 2; [0029]-Applicant's 1; Figure 1) at a position downstream (see Examiner's

annotated Figure 2) of the first switching valve (272; Figure 2; [0029]) at an outlet port of the precursory gas (222; Figure 2) middle line (252; Figure 2) and/or the reactive gas (224; Figure 2) middle line (254; Figure 2; [0029]); and the chamber (102; Figure 2; [0033]) is provided downstream (see Examiner's annotated Figure 2) from the second switching valve (274; Figure 2; [0029]), as claimed by claim 1. Applicant's claim requirement of "reactive gas", "precursory gas", "purging alternately", "at a time when the precursory gas is not supplied", and "at a time when the reactive gas is not supplied" are claim requirements of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Bang further teaches:

- i. The film forming system (Figure 2; [0027]) described in claim 1, wherein the first switching valve (272; Figure 2; [0029]) or the second switching valve (274; Figure 2; [0029]) is a three-way valve, as claimed by claim 3
- ii. The film forming system (Figure 2; [0027]) described in claim 1, wherein the purge gas (208; Figure 2) supplying line (piping header feeding 281,284; Figure 2; [0029]-Applicant's 3; Figure 1) is connected to the precursory gas (222; Figure 2) supplying line (252; Figure 2; [0029]-Applicant's 2; Figure 1) to which the precursory gas (222; Figure

- 2) middle line (252; Figure 2) is arranged and/or the reactive gas (224; Figure 2) supplying line (254; Figure 2; [0029]-Applicant's 1; Figure 1) to which the reactive gas (224; Figure 2) middle line (254; Figure 2; [0029]) is arranged and the precursory gas (222; Figure 2) and/or the reactive gas (224; Figure 2) each of which is filled in the precursory gas (222; Figure 2) middle line (252; Figure 2) and/or the reactive gas (224; Figure 2) middle line (254; Figure 2; [0029]) is supplied to the chamber (102; Figure 2; [0033]) by pushing out the precursory gas (222; Figure 2) and/or the reactive gas (224; Figure 2) by the use of the purge gas (208; Figure 2), as claimed by claim 4
- iii. The film forming system (Figure 2; [0027]) described in claim 1, wherein the precursory gas (222; Figure 2) and/or the reactive gas (224; Figure 2) is supplied to the chamber (102; Figure 2; [0033]) in 0.1 through 2 second, as claimed by claim 5. Applicant's entire claim requirement is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bang, Won et al. (US 20020000195 A1) in view of Ahn, Kie Y. (US 20020122885 A1). Bang is discussed above. Bang does not teach Bang's film forming system (Figure 2; [0027]) described in claim 1, wherein concentration adjusting devices (Applicant's 91/92; Figure 9) to adjust each concentration of Bang's precursory gas (222; Figure 2) and Bang's reactive gas (224; Figure 2) is connected to Bang's precursory gas (222; Figure 2) supplying line (252; Figure 2; [0029]-Applicant's 2; Figure 1) and Bang's reactive gas (224; Figure 2) supplying line (254; Figure 2; [0029]-Applicant's 1; Figure 1) respectively and each concentration adjusting device adjusts each concentration of Bang's precursory gas (222; Figure 2) and Bang's reactive gas (224; Figure 2) so as to supply each gas at more than or equal to 0.15×10^{-6} mol/cm² with respect to an area of Bang's substrate on which Bang's thin film is formed, as claimed by claim 6. With respect to Applicant's claim requirement of "...so as to supply each gas at more than or equal to 0.15.times.10.sup.-6 mol/cm.sup.2 ...", said claim requirement is an intended use claim requirement in Bang's pending apparatus claims.

Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of

performing the intended use, then it meets the claim (In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Ahn also teaches a CVD apparatus including a dedicated vacuum pump for his precursor gases (X, Y; Figure 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Bang to add dedicated pumps for each of Bang's sources as taught by Ahn.

Motivation for Bang to add dedicated pumps for each of Bang's sources as taught by Ahn is for "concurrent" pumping to establish "initial pressure conditions" as taught by Ahn ([0035]).

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bang, Won et al. (US 20020000195 A1) in view of Udagawa; Takashi (US 6645302 B2). Bang is discussed above. Bang does not teach Bang's film forming system (Figure 2; [0027]) described in claim 1, wherein each of Bang's precursory gas (222; Figure 2) supplying line (252; Figure 2; [0029]-Applicant's 2; Figure 1) and Bang's reactive gas (224; Figure 2) supplying line (254; Figure 2; [0029]-Applicant's 1; Figure 1) is independently connected to Bang's chamber (102; Figure 2; [0033]), as claimed by claim 7

Udagawa teaches a similar CVD vapor precursor delivery system (Figure 17) including independently connected precursor delivery lines (29-1, 29-2; Figure 17) from independent sources (49, 50; Figure 17) respectively.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Bang to add additional precursor sources as taught by Udagawa.

Motivation for Bang to add additional precursor sources as taught by Udagawa is for depositing films of plural compositions as taught by Udagawa (column 9, lines 28-60).

7. Claim 8 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bang, Won et al. (US 20020000195 A1). Bang is discussed above. Applicant's claim 8, below, can be interpreted as intended use in the pending apparatus claims. Bang teaches Bang's film forming system (Figure 2; [0027]) described in claim 1, and that is arranged to purge Bang's chamber (102; Figure 2; [0033]) so that each concentration of Bang's precursory gas (222; Figure 2) and/or Bang's reactive gas (224; Figure 2) becomes less than or equal to 1/1000 in less than or equal to 2 seconds, as claimed by claim 8.

If Applicant's claim 8 is not deemed to recite intended use features, then, it would be obvious to one of ordinary skill in the art at the time the invention was made to optimize the operation of Bang's apparatus.

Motivation to optimize the operation of Bang's apparatus is for increasing throughput of Bang's apparatus.

Response to Arguments

8. Applicant's arguments, see pages 5, filed August 8, 2011, with respect to the rejections of claims 1, and 3-8 under Fujioka have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new grounds of rejection is made in view of Bang.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 6pm EST. The fax phone number for the organization where this application or

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proceeding is assigned is 571-273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272- 1435.

/Rudy Zervigon/

Primary Examiner, Art Unit 1716